FORM PTO-1390 (REV. 5-93)	U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTORNEY'S DOCKET NUMBER 10191/2264

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371

U.S. APPLICATION NO. (If known, see 37 CFR 1.5)
10/070972

INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE(S) CLAIMED
PCT/DE00/03022	(02.09.00) 2 September 2000	(11.09.99) 11 September 1999

TITLE OF INVENTION
NAVIGATION SYSTEM, NAVIGATION METHOD AND NAVIGATION CARD FOR A MEANS OF LOCOMOTION

APPLICANT(S) FOR DO/EO/US
RYCHLAK, Stefan

Applicant(s) herewith submit to the United States Designated/Elected Office (DO/EO/US) the following items and other information

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☐ This is an express request to begin national examination procedures (35 U.S.C. 371(f)) immediately rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
   a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
   b. ☒ has been transmitted by the International Bureau.
   c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US)
6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
   a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
   b. ☐ have been transmitted by the International Bureau.
   c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
   d. ☒ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)) (unsigned).
10. ☒ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern other document(s) or information included:

11. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A **FIRST** preliminary amendment.
    ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
14. ☒ A substitute specification and a marked up version thereof.
15. ☐ A change of power of attorney and/or address letter.
16. ☒ Other items or information: International Search Report, Form PCT/RO/101 and English translation of International Preliminary Examination Report.

Express Mail No. EL594613051

U.S. APPLICATION NO. if known, see 37 C.F.R.1.5	INTERNATIONAL APPLICATION NO.	ATTORNEY'S DOCKET NUMBER
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17. ☒ The following fees are submitted:	CALCULATIONS	PTO USE ONLY
Basic National Fee (37 CFR 1.492(a)(1)-(5)): Search Report has been prepared by the EPO or JPO $890.00		
International preliminary examination fee paid to USPTO (37 CFR 1.482) . . . $710.00		
No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2)) $740.00		
Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO $1,040.00		
International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4) $100.00		
ENTER APPROPRIATE BASIC FEE AMOUNT =	$ 890	
Surcharge of $130.00 for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492(e)).	$	

Claims	Number Filed	Number Extra	Rate		
Total Claims	6 - 20 =	0	X $18.00	$ 0	
Independent Claims	3 - 3 =	0	X $84.00	$ 0	
Multiple dependent claim(s) (if applicable)			+ $280.00	$ 0	
TOTAL OF ABOVE CALCULATIONS =				$ 890	
Reduction by 1/2 for filing by small entity, if applicable. Verified Small Entity statement must also be filed. (Note 37 CFR 1.9, 1.27, 1.28).				$	
SUBTOTAL =				$ 890	
Processing fee of $130.00 for furnishing the English translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492(f)). +				$	
TOTAL NATIONAL FEE =				$ 890	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). $40.00 per property +				$	
TOTAL FEES ENCLOSED =				$ 890	
				Amount to be: refunded	$
				charged	$

a. ☐ A check in the amount of $_____ to cover the above fees is enclosed.

b. ☒ Please charge my Deposit Account No. 11-0600 in the amount of $890.00 to cover the above fees. A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 11-0600. A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

for Richard Mayer (by J. Lee Reg. No. 36,197)
SIGNATURE

Kenyon & Kenyon
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Richard L. Mayer, Reg. No. 22,490
NAME

March 11, 2002
DATE

[10191/2264]

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s)	:	Stefan RYCHLAK
Serial No.	:	To Be Assigned
Filed	:	Herewith
For	:	NAVIGATION SYSTEM, NAVIGATION METHOD AND NAVIGATION CARD FOR A MEANS OF LOCOMOTION
Art Unit	:	To Be Assigned
Examiner	:	To Be Assigned

Assistant Commissioner for Patents
Washington, D.C. 20231

PRELIMINARY AMENDMENT AND
37 C.F.R. § 1.125 SUBSTITUTE SPECIFICATION STATEMENT

S I R:

Please amend the above-identified application before examination, as set forth below.

IN THE SPECIFICATION AND ABSTRACT:

In accordance with 37 C.F.R. § 1.121(b)(3), a Substitute Specification (including the Abstract, but without claims) accompanies this response. It is respectfully requested that the Substitute Specification (including Abstract) be entered to replace the Specification of record.

IN THE CLAIMS:

On the first page of the claims, first line, change "What is claimed is:" to --WHAT IS CLAIMED IS:--.

Please cancel, without prejudice, claims 1 to 10 in the underlying PCT application. Please also cancel, without prejudice, substitute claims 1-6 in the annex to the International Preliminary Examination Report.

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Please add the following new claims:

--11. (New) A navigation card for use with a key card reader of a radio receiver of a navigation system to calculate a route for a transportation device from one location to a navigation destination, the navigation card comprising:

a memory in which at least one navigation destination is stored for transmission to the navigation system; and

audio data associated with the at least one navigation destination stored in the memory;

wherein the navigation card is insertable into, and read by, the key card reader of the radio receiver, the key card reader normally adapted to read a key card to establish the operational readiness of the radio receiver.

12. (New) The navigation card according to claim 11, wherein the audio data includes information about the navigation destination.

13. (New) A navigation method for a transportation device to navigate from one location to a navigation destination, the method comprising:

reading the navigation destination from the memory of a navigation card by a key card reader of a radio receiver;

transmitting the navigation destination from the radio receiver to a navigation unit to calculate a route;

reading audio data associated with the navigation destination from the memory of the navigation card; and

reproducing acoustically the audio data, depending on the present location relative to the read navigation destination.

14. (New) The navigation method according to claim 13, wherein the audio data is read and reproduced upon reaching the navigation destination.

15. (New) The navigation method according to claim 13, wherein the audio data is read and reproduced during navigational guidance.

16. (New) A navigation system for a transportation device to navigate from one location to a navigation destination, the system comprising:

a navigation unit;

a radio receiver having a key card reader into which a key card is insertable to establish operational readiness, the radio receiver being connected to the navigation unit for the purpose of transferring navigation destinations thereto;

a navigation card having at least one navigation destination stored on it, the navigation card being adapted to be inserted into the key card reader, wherein the navigation destination is readable from the navigation card; and

audio data associated with the read navigation destination on the navigation card, the audio data being readable and reproducible by the radio receiver, depending on the present location relative to the navigation destination. --.

Remarks

This Preliminary Amendment cancels, without prejudice, original claims 1 to 10 in the underlying PCT Application No. PCT/DE01/03022, and also cancels, without prejudice, substitute claims 1-6 in the annex to the International Preliminary Examination Report. This Preliminary Amendment adds, without prejudice, new claims 11 to 16 . The new claims, *inter alia*, conform the claims to U.S. Patent and Trademark Office rules and do not add new matter to the application.

In accordance with 37 C.F.R. § 1.121(b)(3), the Substitute Specification (including the Abstract, but without the claims) contains no new matter. The amendments reflected in the Substitute Specification (including Abstract) are to conform the Specification and Abstract to U.S. Patent and Trademark Office rules or to correct informalities. As required by 37 C.F.R. § 1.121(b)(3)(iii) and § 1.125(b)(2), a Marked Up Version Of The Substitute Specification comparing the Specification of record and the Substitute Specification also accompanies this Preliminary Amendment. Approval and entry of the Substitute Specification (including Abstract) is respectfully requested.

The underlying PCT Application No. PCT/DE01/03022 includes an International Search Report, dated March 7, 2001, as well as an International Preliminary Examination Report dated October 18, 2001. The Search Report includes a list of documents that were uncovered in the underlying PCT Application. A copy of the Search Report accompanies this Preliminary Amendment. In addition, a copy of the International Preliminary Examination Report (including annexes) and an English translation thereof are enclosed.

Applicant asserts that the subject matter of the present application is new, non-obvious, and useful. Prompt consideration and allowance of the application are respectfully requested.

Respectfully Submitted,
KENYON & KENYON

Dated: 3/11/02

By: for Richard L. Mayer
Richard L. Mayer
(Reg. No. 22,490)

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PATENT & TRADEMARK OFFICE

[10191/2264]

NAVIGATION SYSTEM, NAVIGATION METHOD AND NAVIGATION CARD FOR A MEANS OF LOCOMOTION

FIELD OF THE INVENTION

The present invention relates to a navigation system for an arrangement for locomotion, i.e., a transportation device, in particular, for use in a vehicle, motor vehicle, ship or aircraft, to navigate from one location to a navigation destination, the navigation system having a radio receiver, such as a car radio, and a navigation unit, with a key card being provided that is insertable into a key card reader of the radio receiver to establish the operational readiness thereof, with the radio receiver also being connected to the navigation unit for transferring navigation destinations thereto. The present invention also relates to a navigation method for an arrangement for locomotion for use in a vehicle, motor vehicle, ship or aircraft, to navigate from one location to a destination, using a radio receiver, such as a car radio, and a navigation unit, with at least the navigation destination being entered into the navigation unit via the radio receiver. The present invention further relates to a navigation card for a navigation system for an arrangement for locomotion, such as a vehicle, motor vehicle, ship or aircraft, to navigate from one location to a navigation destination, the navigation system having a radio receiver, such as a car radio, and a navigation unit.

BACKGROUND INFORMATION

In an arrangement for locomotion, such as motor vehicles, aircraft or ships, permanently installed navigation systems quickly, easily and safely guide a driver of the arrangement for locomotion from a present location to a desired destination without the driver of the arrangement for locomotion having to go to the trouble of planning a route and acquiring the necessary cards beforehand. For this purpose, navigation data based, for example, on maps, geographic maps or city street maps, is stored in the navigation system, for example on CD-ROM. The navigation unit may use GPS (Global Positioning System) to determine a present location and calculate corresponding navigation instructions that lead to a predetermined destination. The navigation data may include data about streets and routes for motor vehicles.

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However, before the navigation system is able to perform its function and calculate a route from the location to the destination for navigational guidance purposes, a user must enter the desired destination and possibly also the present location. This is done, for example, from a keypad or a similar manually operated input device.

SUMMARY OF THE INVENTION

The object of the present invention is to provide a navigation system and a navigation method that provide more applications for the user and is easier to operate.

According to the present invention, this object is achieved by providing at least one navigation card corresponding to the key card, with a memory on this card containing at least one navigation destination of particular interest, for example tourist sights, for optional transmission to the navigation unit as the navigation destination.

This has the advantage that the navigation system additionally serves, for example, as a tour guide, making guided tours of this type easily, economically and at any time available simply by inserting a navigation card into a key card reader of the radio receiver.

To provide the user with descriptions and information about activated points of interest, the navigation card also includes audio data relating to the stored points of interest, with this data being playable via the radio receiver when the navigation unit determines that the present location of the arrangement for locomotion corresponds to a navigation destination belonging to this audio file in the form of a point of interest.

Different navigation cards are suitably provided for different cities.

According to the present invention, a navigation method of the type mentioned above involves inserting a key card for this navigation card into the radio receiver, having the location of a point of particular interest output from this card as the navigation destination and transferring it to the navigation unit for navigational guidance purposes.

To provide the user with descriptions and information about activated points of interest, an audio file associated with this point of interest is output from the navigation card and played upon reaching the navigation destination.

User-selectable navigation destinations corresponding to points of particular interest that are stored on the navigation card inserted into the radio receiver are displayed for the purpose of putting together an individual sightseeing tour.

To carry out entire sightseeing tours, a sequence of multiple navigation destinations corresponding to points of interest are automatically read from the navigation card and transferred to the navigation unit for navigational guidance purposes, with a subsequent navigation destination always being read and transferred once a preceding navigation destination has been reached.

To provide a reference to or information about additional points of interest located along the navigation route, such as tourist sights or historical locations, audio data is read from the navigation card and played during navigational guidance to a navigation destination corresponding to a point of interest.

According to the present invention, the navigation card of the type mentioned above is designed as a key card for the radio receiver, with points of interest for the navigation unit connected to the radio receiver being stored on the navigation card.

This has the advantage that it provides a standardized arrangement for making points of interest available as navigation destinations, which may be used by any navigation system having a radio receiver and a key card reader without requiring additional hardware.

Audio files explaining the points of interest or other audio files that contain sound effects are additionally stored on the navigation card. When this audio file is played upon reaching a certain point of interest, the user is provided with additional acoustic information about this point of interest, for example a tourist sight, or the audio file conveys a specific sound effect corresponding to the point of interest to him.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 illustrates a schematic block diagram of a preferred embodiment of a navigation system according to the present invention.

DETAILED DESCRIPTION

The preferred embodiment, illustrated in Figure 1, of a navigation system 100 according to the present invention includes a navigation unit 10, having a navigation processor 12, and a radio receiver 14. If the navigation unit according to the present invention is installed in a motor vehicle, the radio receiver is, for example, a car radio. An antenna 16 is connected to radio receiver 14 as well as to an internal GPS (Global Positioning System) device (not illustrated) of navigation unit 10. Navigation unit 10 is connected to an acoustic output device 18 to output navigation instructions. Radio receiver 14 is also connected to acoustic output device 18 to play back audio transmissions. Using a keyboard 20, a user enters commands or navigation destinations and possibly also a present location into navigation unit 10 via the navigation processor, which processes manual input of this type. A number of different CDs 24, which include, among other things, a navigation CD having a digital map base, are arranged in a CD changer 22.

A key card (not illustrated) for establishing the operational readiness of radio receiver 14 is insertable into radio receiver 14. This key card uniquely serves as an antitheft device, since radio receiver 14 is unusable, and therefore worthless, without the key card. For this purpose, the key card contains a memory that holds corresponding authorization information.

According to the present invention, navigation cards 26 corresponding to this key card in terms of shape and memory allocation, are also provided, with these cards being readable by the key card reader of radio receiver 14 and the memory provided therein containing additional information relating to points of interest as navigation destinations, such as museums, historical city districts and other tourist sights, as indicated by block 28. Different navigation cards 26 contain, for example, navigation destinations corresponding to the tourist sights of different cities. Navigation processor 12 is able to access this data stored on navigation card 26, as indicated by arrows 30, however with navigation card 26 continuing to be inserted into the key card reader (not illustrated) of radio receiver 14 provided for the key card.

After navigation card 26 has been inserted, the navigation destinations corresponding to tourist sights or other points of interest stored thereon are displayed on a display 32, for example, allowing a user to select one ore more navigation destinations, which are then transferred to the navigation unit, i.e., navigation processor 12, in the form of a sightseeing tour, with the system subsequently providing navigational guidance to the corresponding tourist sights.

Navigation card 26 is inserted, for example, only for the purpose of entering the desired navigation destination and calculating a corresponding route. To continue using radio receiver 14, the corresponding key card is then reinserted.

In addition, information corresponding to the tourist sights, for example, is stored in spoken form on navigation card 26, for example as an audio file. This audio file is invoked and played as soon as the arrangement for locomotion has reached a tourist sight that was previously entered as a navigation destination. For this purpose, navigation card 26 remains inserted into radio receiver 14 even after the navigation destination has been entered and the route calculated.

By way of example, a memory of a navigation card according to the present invention has the following contents:

Museum	Including spoken explanation.
Historical city district	Including spoken explanation.
Forest areas	Including spoken explanation.
Zoo	Including spoken explanation.
Opera house	Including specific sound effects, such as a piece of classical music.
Train station	Including train schedules which are reproducible as speech, where for example

	train connections leaving during a presettable period of time after arrival at the station being output.
Highway rest areas	Including voice output of services available at the rest area, such as gas station, restaurant, etc.

Etc.

For example, if "sightseeing tour" is selected, a route within the historic part of town is suggested. The above-mentioned key words are therefore associated with multiple navigation destinations. This data is retrieved from navigation card 26, and the system provides navigational guidance to parking spots close to the different navigation destinations having corresponding tourist sights and plays corresponding audio files that explain the respective tourist sights. Audio instructions are also given during navigational guidance, with a traffic safety warning being suitably output beforehand for safety reasons, and with the user being able to turn these audio instructions off during the trip.

The present invention thus opens up a new range of applications for navigation systems 100 that include a navigation unit 10,12 having a radio receiver 14, i.e., a car radio. The present invention is preferably used, for example, for bus tours. In addition, regional tourism boards may create and offer corresponding navigation cards 26. In this regard, it is particularly advantageous to provide navigation cards 26 that have identical navigation destinations, but audio files in different languages. The use of the key card reader belonging to radio receivers 14 establishes a standard, thus eliminating the need to provide additional hardware in either navigation system 100 or radio receiver 14.

ABSTRACT

A navigation system for an arrangement for locomotion, such as a vehicle, motor vehicle, ship or aircraft, to navigate from one location to a navigation destination, the navigation system having a radio receiver, such as a car radio, and a navigation unit, with a key card being provided that is insertable into a key card reader of the radio receiver to establish the operational readiness thereof, with the radio receiver also being connected to the navigation unit for the purpose of transmitting navigation destinations thereto. At least one navigation card corresponding to the key card is provided, with a memory on this card containing at least one navigation destination corresponding, for example, to tourist sights for optional transmission to the navigation unit as a navigation destination.

[10191/2264]

NAVIGATION SYSTEM, NAVIGATION METHOD AND NAVIGATION CARD FOR A MEANS OF LOCOMOTION

[Field of the Invention

] **FIELD OF THE INVENTION**

The present invention relates to a navigation system for [a means of] **an arrangement for** locomotion, i.e., a transportation device, in particular, for **use in** a vehicle, motor vehicle, ship or aircraft, to navigate from one location to a navigation destination, the navigation system having a radio receiver, [in particular] **such as** a car radio, and a navigation unit, with a key card being provided that is insertable into a key card reader of the radio receiver to establish the operational readiness thereof[;], with the radio receiver also being connected to the navigation unit for transferring navigation destinations thereto[, according to the definition of the species in Claim 1]. The present invention also relates to a navigation method for [a means of] **an arrangement for** locomotion[, in particular,] for **use in** a vehicle, motor vehicle, ship or aircraft, to navigate from one location to a destination, [having] using a radio receiver, [in particular] **such as** a car radio, and a navigation unit, with at least the navigation destination being entered into the navigation unit via the radio receiver[, according to the definition of the species in Claim 4]. The present invention further relates to a navigation card for a navigation system for [a means of] **an arrangement for** locomotion, [in particular, for] **such as** a vehicle, motor vehicle, ship or aircraft, to navigate from one location to a navigation destination, the navigation system having a radio receiver, [in particular] **such as** a car radio, and a navigation unit[, according to the definition of the species in Claim 9].

[Background Information

] **BACKGROUND INFORMATION**

In [means of] **an arrangement for** locomotion, such as motor vehicles, aircraft or ships, permanently installed navigation systems quickly, easily and safely guide a driver of the [means of] **arrangement for** locomotion from a present location to a desired destination

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without the driver of the [means of] **arrangement for** locomotion having to go to the trouble of planning a route and acquiring the necessary cards beforehand. For this purpose, navigation data based, for example, on maps, geographic maps or city street maps, is stored in the navigation system, for example on CD-ROM. The navigation unit may use GPS (Global Positioning System) to determine a present location and calculate corresponding navigation instructions that lead to a predetermined destination. The navigation data [preferably] **may** include[s] data about streets and routes for motor vehicles.

However, before the navigation system is able to perform its function and calculate a route from the location to the destination for navigational guidance purposes, a user must enter the desired destination and possibly also the present location. This is done, for example, from a keypad or a similar manually operated input device.

[Description of the Invention, Object, Solution, Advantages

] **SUMMARY OF THE INVENTION**

The object of the present invention is to [further develop] **provide** a navigation system and a navigation method [of the type mentioned above so] that [it] provide[s] more applications for the user and is easier to operate.

[This object is achieved by a navigation system of the type mentioned above having the features characterized in Claim 1; by a navigation method having the features characterized in Claim 4; and by a navigation card having the features characterized in Claim 9.]

According to the present invention, this object is achieved by providing at least one navigation card corresponding to the key card, with a memory on this card containing at least one navigation destination of particular interest, for example tourist sights, for optional transmission to the navigation unit as the navigation destination.

This has the advantage that the navigation system additionally serves, for example, as a tour guide, making guided tours of this type easily, economically and at any time available simply by inserting a navigation card into a key card reader of the radio receiver.

[Preferred refined embodiments of the navigation system are described in Claims 2 and 3.

]

To provide the user with descriptions and information about activated points of interest, the navigation card also includes audio data relating to the stored points of interest, with this data being playable via the radio receiver when the navigation unit determines that the present location of the [means of] **arrangement for** locomotion corresponds to a navigation destination belonging to this audio file in the form of a point of interest.

Different navigation cards are suitably provided for different cities.

According to the present invention, a navigation method of the type mentioned above involves inserting a key card for this navigation card into the radio receiver, having the location of a point of particular interest output from this card as the navigation destination and [transferred] transferring it to the navigation unit for navigational guidance purposes.

[Preferred refined embodiments of the method are described in Claims 5 through 8.
]
To provide the user with descriptions and information about activated points of interest, an audio file [belonging to] associated with this point of interest is output from the navigation card and played upon reaching the navigation destination.

User-selectable navigation destinations corresponding to points of particular interest that are stored on the navigation card inserted into the radio receiver are displayed for the purpose of putting together an individual sightseeing tour.

To carry out entire sightseeing tours, a sequence of multiple navigation destinations corresponding to points of interest are automatically read from the navigation card and transferred to the navigation unit for navigational guidance purposes, with a subsequent navigation destination always being read and transferred once a preceding navigation destination has been reached.

To provide a reference to or information about additional points of interest located along the navigation route, such as tourist sights or historical locations, audio data is read from the

navigation card and played during navigational guidance to a navigation destination corresponding to a point of interest.

According to the present invention, the navigation card of the type mentioned above is designed as a key card for the radio receiver, with points of interest for the navigation unit connected to the radio receiver being stored on the navigation card.

This has the advantage that it provides a standardized [means of] **arrangement for** making points of interest available as navigation destinations, which may be used by any navigation system having a radio receiver and a key card reader without requiring additional hardware.

[According to one advantageous further developement, audio] **Audio** files explaining the points of interest or other audio files that contain sound effects are additionally stored on the navigation card. When this audio file is played upon reaching a certain point of interest, the user is provided with additional acoustic information about this point of interest, for example a tourist sight, or the audio file conveys a specific sound effect corresponding to the point of interest to him.

[Brief Description of the Drawings
] **BRIEF DESCRIPTION OF THE DRAWINGS**

[The present invention is explained in greater detail below on the basis of the attached drawing. The sole figure in this drawing shows] **Figure 1 illustrates** a schematic block diagram of a preferred embodiment of a navigation system according to the present invention.

[The Best Way to Execute the Invention
] **DETAILED DESCRIPTION**

The preferred embodiment, illustrated in Figure 1, of a navigation system 100 according to the present invention includes a navigation unit 10, having a navigation processor 12, and a radio receiver 14. If the navigation unit according to the present invention is installed in a motor vehicle, the radio receiver is, for example, a car radio. An antenna 16 is connected to radio receiver 14 as well as to an internal GPS (Global [Ground] Positioning System) device (not illustrated) of navigation unit 10. Navigation unit 10 is connected to an acoustic output device 18 to output navigation instructions. Radio receiver 14 is also connected to acoustic

output device 18 to play back audio transmissions. Using a keyboard 20, a user enters commands or navigation destinations and possibly also a present location into navigation unit 10 via the navigation processor, which processes manual input of this type. A number of different CDs 24, which include, among other things, a navigation CD having a digital map base, are arranged in a CD changer 22.

A key card (not illustrated) for establishing the operational readiness of radio receiver 14 is insertable into radio receiver 14. This key card uniquely serves as an antitheft device, since radio receiver 14 is unusable, and therefore worthless, without the key card. For this purpose, the key card contains a memory that holds corresponding authorization information.

According to the present invention, navigation cards 26 corresponding to this key card in terms of shape and memory allocation, are also provided, with these cards being readable by the key card reader of radio receiver 14 and the memory provided therein containing additional information relating to points of interest as navigation destinations, such as museums, historical city districts and other tourist sights, as indicated by block 28. Different navigation cards 26 contain, for example, navigation destinations corresponding to the tourist sights of different cities. Navigation processor 12 is able to access this data stored on navigation card 26, as indicated by arrows 30, however with navigation card 26 continuing to be inserted into the key card reader (not illustrated) of radio receiver 14 provided for the key card.

After navigation card 26 has been inserted, the navigation destinations corresponding to tourist sights or other points of interest stored thereon are displayed on a display 32, for example, allowing a user to select one ore more navigation destinations, which are then transferred to the navigation unit, i.e., navigation processor 12, in the form of a sightseeing tour, with the system subsequently providing navigational guidance to the corresponding tourist sights.

Navigation card 26 is inserted, for example, only for the purpose of entering the desired navigation destination and calculating a corresponding route. To continue using radio receiver 14, the corresponding key card is then reinserted.

In addition, information corresponding to the tourist sights, for example, is stored in spoken form on navigation card 26, for example as an audio file. This audio file is invoked and played as soon as the [means of] **arrangement for** locomotion has reached a tourist sight that was previously entered as a navigation destination. For this purpose, navigation card 26 remains inserted into radio receiver 14 even after the navigation destination has been entered and the route calculated.

By way of example, a memory of a navigation card according to the present invention has the following contents:

Museum	Including spoken explanation.
Historical city district	Including spoken explanation.
Forest areas	Including spoken explanation.
Zoo	Including spoken explanation.
Opera house	Including specific sound effects, such as a piece of classical music.
Train station	Including train schedules which are reproducible as speech, where for example train connections leaving during a presettable period of time after arrival at the station being output.
Highway rest areas	Including voice output of services available at the rest area, such as gas station, restaurant, etc.

Etc.

For example, if "sightseeing tour" is selected, a route within the historic part of town is suggested. The above-mentioned key words are therefore associated with multiple navigation

destinations. This data is retrieved from navigation card 26, and the system provides navigational guidance to parking spots close to the different navigation destinations having corresponding tourist sights and plays corresponding audio files that explain the respective tourist sights. Audio instructions are also given during navigational guidance, with a traffic safety warning being suitably output beforehand for safety reasons, and with the user being able to turn these audio instructions off during the trip.

The present invention thus opens up a new range of applications for navigation systems 100 that include a navigation unit 10,12 having a radio receiver 14, i.e., a car radio. The present invention is preferably used, for example, for bus tours. In addition, regional tourism boards may create and offer corresponding navigation cards 26. In this regard, it is particularly advantageous to provide navigation cards 26 that have identical navigation destinations, but audio files in different languages. The use of the key card reader belonging to radio receivers 14 establishes a standard, thus eliminating the need to provide additional hardware in either navigation system 100 or radio receiver 14.

[Abstract

] **ABSTRACT**

A navigation system [(100)] for [a means of] **an arrangement for** locomotion, [in particular for] **such as** a vehicle, motor vehicle, ship or aircraft, to navigate from one location to a navigation destination, the navigation system having a radio receiver [(14)], [in particular] **such as** a car radio, and a navigation unit [(10, 12)], with a key card being provided that is insertable into a key card reader of the radio receiver [(14)] to establish the operational readiness thereof[; and], with the radio receiver [(14)] also being connected to the navigation unit [(10, 12)] for the purpose of transmitting navigation destinations thereto. At least one navigation card [(26)] corresponding to the key card is provided, with a memory on this card containing at least one navigation destination corresponding, for example, to tourist sights for optional transmission to the navigation unit [(10, 12)] as a navigation destination.

[(Figure)]

[10191/2264]

NAVIGATION SYSTEM, NAVIGATION METHOD AND NAVIGATION CARD FOR A MEANS OF LOCOMOTION

Field of the Invention

The present invention relates to a navigation system for a means of locomotion, in particular, for a vehicle, motor vehicle, ship or aircraft, to navigate from one location to a navigation destination, having a radio receiver, in particular a car radio, and a navigation unit, with a key card being provided that is insertable into a key card reader of the radio receiver to establish the operational readiness thereof; with the radio receiver also being connected to the navigation unit for transferring navigation destinations thereto, according to the definition of the species in Claim 1. The present invention also relates to a navigation method for a means of locomotion, in particular, for a vehicle, motor vehicle, ship or aircraft, to navigate from one location to a destination, having a radio receiver, in particular a car radio, and a navigation unit, with at least the navigation destination being entered into the navigation unit via the radio receiver, according to the definition of the species in Claim 4. The present invention further relates to a navigation card for a navigation system for a means of locomotion, in particular, for a vehicle, motor vehicle, ship or aircraft, to navigate from one location to a navigation destination, having a radio receiver, in particular a car radio, and a navigation unit, according to the definition of the species in Claim 9.

Background Information

In means of locomotion, such as motor vehicles, aircraft or ships, permanently installed navigation systems quickly, easily and safely guide a driver of the means of locomotion from a present location to a desired destination without the driver of the means of locomotion having to go to the trouble of planning a route and acquiring the necessary cards beforehand. For this purpose, navigation data based, for example, on maps, geographic maps or city street maps, is stored in the navigation system, for example on CD-ROM. The navigation unit may use GPS (Global Positioning System) to determine a present location and calculate

corresponding navigation instructions that lead to a predetermined destination. The navigation data preferably includes data about streets and routes for motor vehicles.

However, before the navigation system is able to perform its function and calculate a route from the location to the destination for navigational guidance purposes, a user must enter the desired destination and possibly also the present location. This is done, for example, from a keypad or a similar manually operated input device.

Description of the Invention, Object, Solution, Advantages

The object of the present invention is to further develop a navigation system and a navigation method of the type mentioned above so that it provides more applications for the user and is easier to operate.

This object is achieved by a navigation system of the type mentioned above having the features characterized in Claim 1; by a navigation method having the features characterized in Claim 4; and by a navigation card having the features characterized in Claim 9.

According to the present invention, this object is achieved by providing at least one navigation card corresponding to the key card, with a memory on this card containing at least one navigation destination of particular interest, for example tourist sights, for optional transmission to the navigation unit as the navigation destination.

This has the advantage that the navigation system additionally serves, for example, as a tour guide, making guided tours of this type easily, economically and at any time available simply by inserting a navigation card into a key card reader of the radio receiver.

Preferred refined embodiments of the navigation system are described in Claims 2 and 3.

To provide the user with descriptions and information about activated points of interest, the navigation card also includes audio data relating to the stored points of interest, with this data being playable via the radio receiver when the navigation unit determines that the present

location of the means of locomotion corresponds to a navigation destination belonging to this audio file in the form of a point of interest.

Different navigation cards are suitably provided for different cities.

According to the present invention, a navigation method of the type mentioned above involves inserting a key card for this navigation card into the radio receiver, having the location of a point of particular interest output from this card as the navigation destination and transferred it to the navigation unit for navigational guidance purposes.

Preferred refined embodiments of the method are described in Claims 5 through 8.

To provide the user with descriptions and information about activated points of interest, an audio file belonging to this point of interest is output from the navigation card and played upon reaching the navigation destination.

User-selectable navigation destinations corresponding to points of particular interest that are stored on the navigation card inserted into the radio receiver are displayed for the purpose of putting together an individual sightseeing tour.

To carry out entire sightseeing tours, a sequence of multiple navigation destinations corresponding to points of interest are automatically read from the navigation card and transferred to the navigation unit for navigational guidance purposes, with a subsequent navigation destination always being read and transferred once a preceding navigation destination has been reached.

To provide a reference to or information about additional points of interest located along the navigation route, such as tourist sights or historical locations, audio data is read from the navigation card and played during navigational guidance to a navigation destination corresponding to a point of interest.

According to the present invention, the navigation card of the type mentioned above is designed as a key card for the radio receiver, with points of interest for the navigation unit connected to the radio receiver being stored on the navigation card.

This has the advantage that it provides a standardized means of making points of interest available as navigation destinations, which may be used by any navigation system having a radio receiver and a key card reader without requiring additional hardware.

According to one advantageous further developement, audio files explaining the points of interest or other audio files that contain sound effects are additionally stored on the navigation card. When this audio file is played upon reaching a certain point of interest, the user is provided with additional acoustic information about this point of interest, for example a tourist sight, or conveys a specific sound effect corresponding to the point of interest to him.

Brief Description of the Drawings

The present invention is explained in greater detail below on the basis of the attached drawing. The sole figure in this drawing shows a schematic block diagram of a preferred embodiment of a navigation system according to the present invention.

The Best Way to Execute the Invention

The preferred embodiment, illustrated in Figure 1, of a navigation system 100 according to the present invention includes a navigation unit 10, having a navigation processor 12, and a radio receiver 14. If the navigation unit according to the present invention is installed in a motor vehicle, the radio receiver is, for example, a car radio. An antenna 16 is connected to radio receiver 14 as well as to an internal GPS (Ground Positioning System) device (not illustrated) of navigation unit 10. Navigation unit 10 is connected to an acoustic output device 18 to output navigation instructions. Radio receiver 14 is also connected to acoustic output device 18 to play back audio transmissions. Using a keyboard 20, a user enters commands or navigation destinations and possibly also a present location into navigation unit 10 via the navigation processor, which processes manual input of this type. A number of different CDs

24, which include, among other things, a navigation CD having a digital map base, are arranged in a CD changer 22.

A key card (not illustrated) for establishing the operational readiness of radio receiver 14 is insertable into radio receiver 14. This key card uniquely serves as an antitheft device, since radio receiver 14 is unusable, and therefore worthless, without the key card. For this purpose, the key card contains a memory that holds corresponding authorization information.

According to the present invention, navigation cards 26 corresponding to this key card in terms of shape and memory allocation, are also provided, with these cards being readable by the key card reader of radio receiver 14 and the memory provided therein containing additional information relating to points of interest as navigation destinations, such as museums, historical city districts and other tourist sights, as indicated by block 28. Different navigation cards 26 contain, for example, navigation destinations corresponding to the tourist sights of different cities. Navigation processor 12 is able to access this data stored on navigation card 26, as indicated by arrows 30, however with navigation card 26 continuing to be inserted into the key card reader (not illustrated) of radio receiver 14 provided for the key card.

After navigation card 26 has been inserted, the navigation destinations corresponding to tourist sights or other points of interest stored thereon are displayed on a display 32, for example, allowing a user to select one ore more navigation destinations, which are then transferred to the navigation unit, i.e., navigation processor 12, in the form of a sightseeing tour, with the system subsequently providing navigational guidance to the corresponding tourist sights.

Navigation card 26 is inserted, for example, only for the purpose of entering the desired navigation destination and calculating a corresponding route. To continue using radio receiver 14, the corresponding key card is then reinserted.

In addition, information corresponding to the tourist sights, for example, is stored in spoken form on navigation card 26, for example as an audio file. This audio file is invoked and played as soon as the means of locomotion has reached a tourist sight that was previously

entered as a navigation destination. For this purpose, navigation card 26 remains inserted into radio receiver 14 even after the navigation destination has been entered and the route calculated.

By way of example, a memory of a navigation card according to the present invention has the following contents:

Museum	Including spoken explanation.
Historical city district	Including spoken explanation.
Forest areas	Including spoken explanation.
Zoo	Including spoken explanation.
Opera house	Including specific sound effects, such as a piece of classical music.
Train station	Including train schedules which are reproducible as speech, where for example train connections leaving during a presettable period of time after arrival at the station being output.
Highway rest areas	Including voice output of services available at the rest area, such as gas station, restaurant, etc.

Etc.

For example, if "sightseeing tour" is selected, a route within the historic part of town is suggested. The above-mentioned key words are therefore associated with multiple navigation destinations. This data is retrieved from navigation card 26, and the system provides navigational guidance to parking spots close to the different navigation destinations having corresponding tourist sights and plays corresponding audio files that explain the respective

tourist sights. Audio instructions are also given during navigational guidance, with a traffic safety warning being suitably output beforehand for safety reasons, and with the user being able to turn these audio instructions off during the trip.

The present invention thus opens up a new range of applications for navigation systems 100 that include a navigation unit 10,12 having a radio receiver 14, i.e., a car radio. The present invention is preferably used, for example, for bus tours. In addition, regional tourism boards may create and offer corresponding navigation cards 26. In this regard, it is particularly advantageous to provide navigation cards 26 that have identical navigation destinations, but audio files in different languages. The use of the key card reader belonging to radio receivers 14 establishes a standard, thus eliminating the need to provide additional hardware in either navigation system 100 or radio receiver 14.

What is claimed is

1. A navigation system (100) for a means of locomotion, in particular for a vehicle, motor vehicle, ship or aircraft, to navigate from one location to a navigation destination, having a radio receiver (14), in particular a car radio, and a navigation unit (10, 12), with a key card being provided that is insertable into a key card reader of the radio receiver (14) to establish the operational readiness thereof; and with the radio receiver (14) also being connected to the navigation unit (10, 12) for the purpose of transmitting navigation destinations thereto, wherein at least one navigation card (26), corresponding to the key card, is provided, with a memory on this card containing at least one navigation destination corresponding to points of interest for optional transfer to the navigation unit (10, 12) as a navigation destination.

2. The navigation system (100) according to Claim 1,
wherein the navigation card (26) also contains audio data corresponding to the stored tourist sights, with this data being playable via the radio receiver (14) when the navigation unit (10, 12) determines that the present location of the means of locomotion corresponds to a navigation destination of a point of interest belonging to this audio file.

3. The navigation system (100) according to Claim 1 or 2,
wherein different navigation cards (26) are provided for different cities.

4. A navigation method for a means of locomotion, in particular for a vehicle, motor vehicle, ship or aircraft, to navigate from one location to a destination, having a radio receiver, in particular a car radio, and a navigation unit, with at least the navigation destination being entered into the navigation unit via the radio receiver,
wherein a navigation card corresponding to a key card for the radio receiver is inserted into the radio receiver, a location of a point of interest is read from this card as the navigation destination and transferred to the navigation unit for navigational guidance purposes.

5. The navigation method according to Claim 4,
wherein, upon reaching the navigation destination, an audio file belonging to this point of interest is read from the navigation card and played.

6. The navigation method according to Claim 4 or 5,
wherein the user-selectable navigation destinations corresponding to points of interest and stored on the navigation card inserted into the radio receiver are displayed.

7. The navigation method according to one of Claims 4 through 6,
wherein a sequence of multiple navigation destinations corresponding to points of interest are automatically read from the navigation card and transferred to the navigation unit for navigational guidance purposes, with a subsequent navigation destination being read and transferred once a previous navigation destination has been reached.

8. The navigation method according to one of Claims 4 through 7,
wherein audio data is read from the navigation card and played during navigational guidance to a navigation destination corresponding to a point of interest.

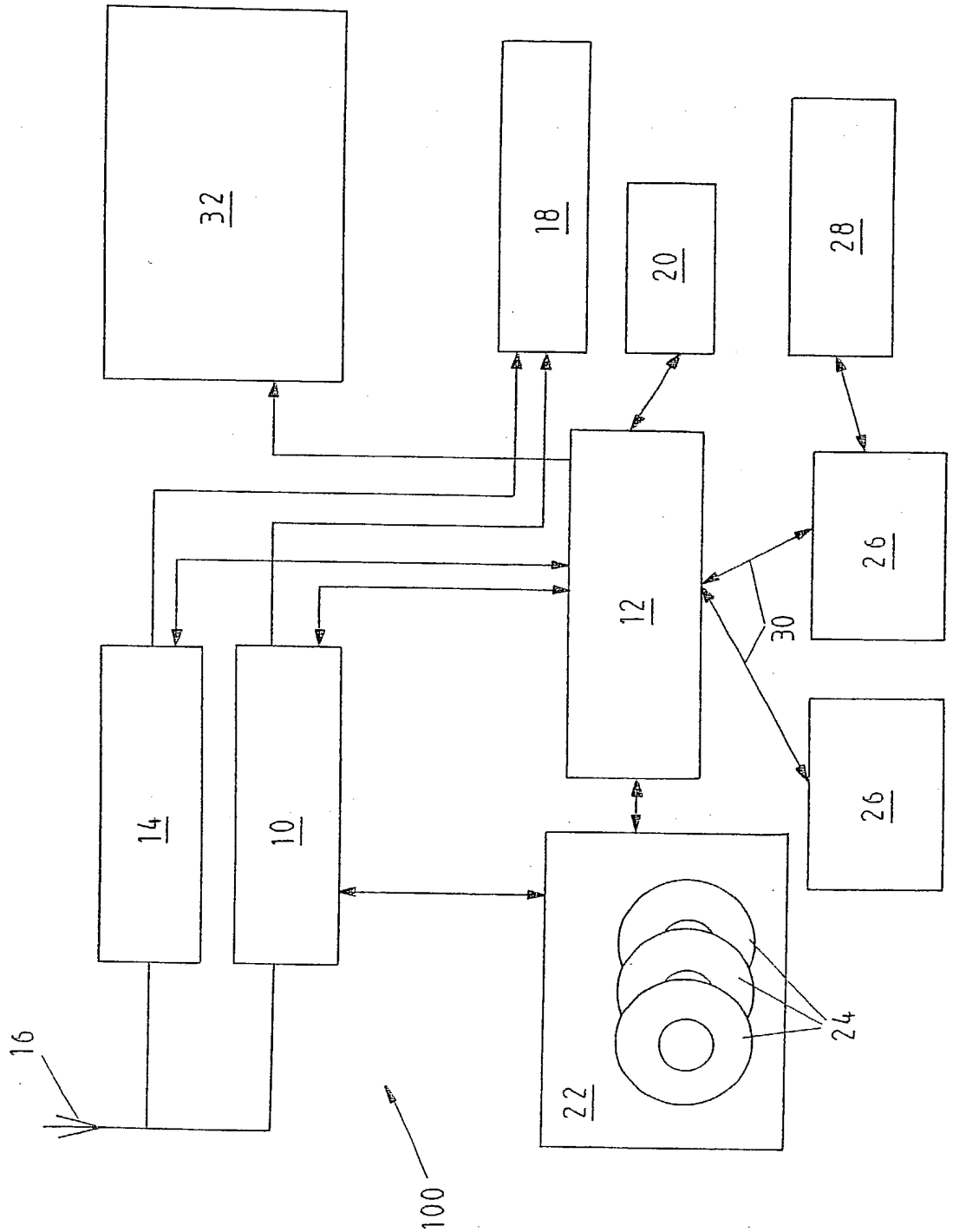
9. A navigation card (26) for a navigation system that is designed, in particular, according to at least one of Claims 1 through 4, for a means of locomotion, in particular for a vehicle, motor vehicle, ship or aircraft, to navigate from one location to a navigation destination, with the navigation unit having at least one radio receiver (14), in particular a car radio, and a navigation unit (10, 12),
wherein the navigation card (26) is designed as a key card for the radio receiver (14), and points of interest for the navigation unit (10, 12) connected to the radio receiver (14) are stored on the navigation card.

10. The navigation card (26) according to Claim 9,
wherein, for at least one point of interest, an audio file explaining this point of interest is also stored on the navigation card (26).

Abstract

A navigation system (100) for a means of locomotion, in particular for a vehicle, motor vehicle, ship or aircraft, to navigate from one location to a navigation destination, having a radio receiver (14), in particular a car radio, and a navigation unit (10, 12), with a key card being provided that is insertable into a key card reader of the radio receiver (14) to establish the operational readiness thereof; and with the radio receiver (14) also being connected to the navigation unit (10, 12) for the purpose of transmitting navigation destinations thereto. At least one navigation card (26) corresponding to the key card is provided, with a memory on this card containing at least one navigation destination corresponding, for example, to tourist sights for optional transmission to the navigation unit (10, 12) as a navigation destination.

(Figure)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#5

[10191/2264]

DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled **NAVIGATION SYSTEM, NAVIGATION METHOD AND NAVIGATION CARD FOR A MEANS OF LOCOMOTION**, the specification of which was filed as International Application No. PCT/DE00/03022 on September 2, 2000.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, § 1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, § 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application(s) for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

PRIOR FOREIGN APPLICATION(S)

Number	Country Filed	Day/Month/Year	Priority Claimed Under 35 USC 119
199 43 600.2	Fed. Rep. of Germany	11 September 1999	Yes

And I hereby appoint Richard L. Mayer (Reg. No. 22,490) and

EL594613051 EL 234417944

Gerard A. Messina (Reg. No. 35,952) my attorneys with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith.

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful and false statements may jeopardize the validity of the application or any patent issued thereon.

j-00

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